

BOD POD®
Body Composition Tracking System

**Operator's
Manual**

PN 2102946, Rev F, 03/28/04

BOD POD® Body Composition Tracking System
Software Site License Agreement

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This is a legal agreement between you and Life Measurement, Inc. ("LMI"). LMI grants you the right to use one copy of the **BOD POD® Body Composition Tracking System Software** ("SOFTWARE") on a single computer to operate the BOD POD Body Composition Tracking System you have purchased. You may not rent or lease this SOFTWARE, but you may transfer the SOFTWARE and accompanying written material on a permanent basis provided you retain no copies and the recipient agrees to the terms of this Agreement. You may not reverse engineer, decompile, or disassemble the SOFTWARE until terminated. You may terminate the Agreement by returning to LMI the original disk and any backup copies. If you breach this Agreement, LMI can terminate this license upon written notification to you.

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Controlling Law:

This Agreement shall be governed by and construed in accordance with the laws of the State of California, United States of America.



Warning & Cautions



WARNING: This equipment contains no operator serviceable components. To prevent electric shock, do not remove panels or boards. Unauthorized removal of panels or boards may void warranty. Refer servicing to LMI authorized personnel only.

WARNING: Do not apply excessive lateral force to the BOD POD when door is fully opened. Doing so may cause the BOD POD to tip over. Only transport the BOD POD when the chamber door is completely closed.

WARNING: Do not re-use breathing tubes or filters.

WARNING: In order to ensure electrical safety and compliance, the power cords for the BOD POD, computer, and computer monitor should be connected to the Isolation Transformer only.

CAUTION: The BOD POD should only be operated by individuals properly trained on the procedures for operating the equipment. The BOD POD door should be kept closed when not in use.

CAUTION: Individuals with health conditions or disabilities, or children under the age of 17 that do not have the ability to open the BOD POD door should not operate the BOD POD without assistance.



CAUTION: Keep hands away from Door Spring when closing or opening door to prevent injury.

CAUTION: To prevent injury, keep hands away from the faces of the door locking magnets when entering/exiting the BOD POD.

CAUTION: Grounding reliability is achieved only when this equipment is connected to a grounded outlet or an equivalent receptacle marked "Hospital Grade". To ensure electrical safety and compliance, all power cables for the BOD POD, computer, and monitor should be connected to the Isolation Transformer only.

CAUTION: Components should be arranged as indicated in the section titled "Selecting a Test Location" in this manual to ensure unobstructed movement during operation and/or activity in the immediate area.

CONTRAINDICATION: Use of this device is contraindicated in claustrophobic subjects intolerant of enclosure in a windowed chamber of this type.

NOTE: For explanation of graphic symbols found on individual system components, please refer to the respective OEM manuals for these components.

Warning & Cautions

Explanation of Symbols

The following explains the symbols that are found on the BOD POD System:



This symbol alerts the user to the presence of a potential shock hazard. The user should consult the Operator's Manual for more information on the potential shock hazard



This symbol alerts the user of the presence of important operating and/or maintenance (service) instructions in the BOD POD Operator's Manual

I

This symbol indicates the "power on" position of the power switch. When the switch is depressed in this position, it indicates that under normal conditions power is on to the unit

O

This symbol indicates the "power off" position of the power switch. When the switch is depressed in this position, it indicates that under normal conditions power is off to the unit

BOD POD® Body Composition Tracking System

Specifications

BOD POD

Manufacturer:

Life Measurement, Inc.
1850 Bates Avenue
Concord, CA, USA 94520

Power Requirements:

Isolation Transformer

Make: Toroid Corporation (Model 1SB-060M)
Input/Output: 100-240V~, 5/2.5 AMPS, 50-60 Hz
Output Power: 600VA (MAX)

CAUTION: Use only "Slow Blow" type (T-Type) fuse rated 250V. Ceramic bodied is recommended.

FUSE RATING: 8.0AT for input setting at 100V, 6.3AT for input setting at 120V, 3.15AT for input setting at 220V and 240V.

Only the above Isolation Transformer power supply should be used with this system. For replacements, contact Life Measurement, Inc. (925-676-6002 or 1-800-4 BOD POD).

Equipment Classification:

Class 1 Equipment, Type B

Main Disconnect Source:

Hospital Grade power supply cord
NOTE: Only use power supply cord provided by Life Measurement, Inc.

Operating Environment:

Temperature Range: 70° - 90°F (21°-32°C)
Relative Humidity: 20%-70% (Non-Condensing)
Altitude: Sea Level to 10,000 ft. (3,078m)

Do not operate in a room where the temperature is not constant.

Do not place near a heater, air conditioner, or fan.

Do not place in direct sunlight.

Do not place near a door that may be opened or shut during testing.



BOD POD® Body Composition Tracking System

Specifications

BOD POD (cont.)

Storage Environment: 40°-100°F (5°-38°C)

Dimensions: Height: 61in (155cm)
Width: 35in. (81cm)
Depth: 52in. (132cm)
Weight: 310lbs (141kg)

SCALE

Make: Tanita Corporation, Japan (Model BWB-627-A),
modified by Life Measurement, Inc.

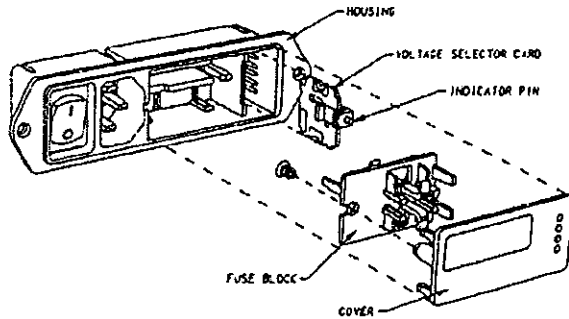
Performance: Capacity = 440lbs (200kg)

Dimensions: Height: 2.5in (64mm)
Width: 13.4in (340mm)
Depth: 12.6in (320mm)
Weight: 25lbs (11.26kg)

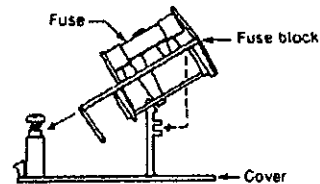


BOD POD® Body Composition Tracking System

Fuse Information



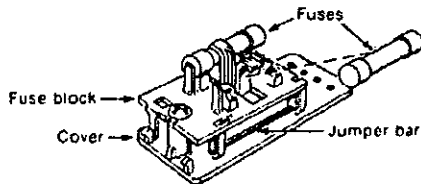
Fuse Block/Cover Assembly



To change from North American to European fusing: open cover, using small blade screwdriver or similar tool; loosen Phillips screw 2 turns; remove fuse block by sliding up, then away from Phillips screw and lifting up from pedestal; change fuses (note that two European fuses are required, although a dummy fuse may be used in the neutral [lower] holder); invert fuse block and slide back onto Phillips screw and pedestal; tighten Phillips screw, and replace cover (note that fuse(s) that go into the housing first are the active set.)

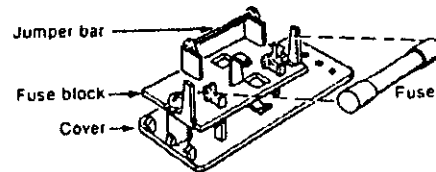
Fuse Changing

European Fusing Arrangement



IEC 127
5 x 20mm 250V
TYPE "T" SLO-BLO

North American Fusing Arrangement



UL 198.6
1/4 X 1-1/4 250V
3AG SLO-BLO



BOD POD® Body Composition Tracking System

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The BOD POD Body Composition Tracking System® uses whole body densitometry to determine body composition (body fat and lean body mass). Whole body densitometry is based on the determination of body mass (weight) and body volume, since body density is equivalent to body weight divided by body volume. Usually, body weight is measured in *kilograms* and body volume is measured in *liters*, producing a density number expressed in *kilograms per liter*. Once the overall body density is known, the relative proportions of body fat and lean body mass can be calculated through the use of scientific equations which relate body density to body fat and lean tissue. Since lean tissue is more dense than fat tissue, a higher density reflects a higher proportion of lean tissue. A commonly used equation which translates whole body density to percent body fat is the Siri equation:

$$\text{Percent Fat} = [495/\text{Density}] - 450$$

Once the percent body fat is calculated, the percent lean body mass can also be determined as follows:

$$\text{Percent Lean Body Mass} = 100 - \text{Percent Fat}$$

Historically, hydrostatic (underwater) weighing has been the standard of practice for the determination of body composition. Hydrostatic weighing measures body volume by the application of Archimedes' Principle, which states the volume of an object is equal to the object's loss of weight in water (assuming the density of water equals one). The amount of air in the lungs contributes to buoyancy; the subject must exhale as much air as possible (known as Residual Lung Volume). Since air floats, this makes the person appear lighter under water, and this air must be measured. Measuring the Residual Lung Volume is done in a separate process following underwater submersion. The body volume is then corrected to reflect Residual Lung Volume.

While hydrostatic weighing can be very accurate under laboratory conditions, there are many methodological requirements associated with hydrostatic weighing that limit its usefulness and widespread application: it is time consuming, often considered unpleasant or difficult, and is poorly suited to clinical practices. Its application to specific populations such as the obese, elderly, infants, or cardiac patients is often trying due to strict compliance issues.

The BOD POD uses air instead of water to measure body volume. It is based on the application of Boyle's Law, which states volume and pressure vary inversely with one another, i.e., as volume increases, pressure decreases and vice-versa.

$$P_1V_1 = P_2V_2 = \text{Constant}$$

(P = Pressure, V = Volume)

The BOD POD produces very small volume changes inside the chamber and measures the pressure response to these small volume changes. This method is first used to determine the interior volume of the empty BOD POD chamber, then determines the interior volume of the chamber when the subject is seated inside. By subtraction, the volume of the person may be determined. For example, if the interior air volume of the empty chamber is measured at 400 liters, and the interior air volume of the chamber is reduced to 350 liters with the subject inside, then the body volume of the subject is 50 liters.

The BOD POD actually consists of two chambers; the *front* or *test* chamber, and the *rear* or *reference* chamber. The seat inside the BOD POD divides the unit into front and rear chambers and provides a common wall between these two chambers. There is a diaphragm mounted on the common wall, which is oscillated during testing by computer control. During a measurement, the diaphragm effectively moves back and forth between the two chambers. It may be useful to think of this as though it were a piston in a cylinder. When the volume is increased in one of the chambers, it is decreased by the same amount in the other chamber, and vice versa. The pressure in each of the two chambers responds immediately to this volume change or perturbation, and the magnitude of the pressure changes indicates the relative size of each of the chambers (the pressure response is less in a large space and greater in a small space). The pressure changes are very small, less than 2 cm H₂O.

During the body volume measurement, the subject breathes in a normal fashion (no differently than you are doing right now as you read this manual). This is known as *relaxed tidal breathing*. This is unlike underwater weighing, which typically requires maximal exhalation to residual volume. Thus, the relevant measurement of lung volume for the BOD POD is not residual volume, but the average lung volume during normal tidal breathing (average thoracic gas volume). This is a much easier measurement to obtain and no difficult maneuvers are required.

The BOD POD allows you to either:

- ▶ **Directly measure the lung volume;**
- ▶ **Use standard prediction equations based on gender, age and height; or**
- ▶ **Enter a previously determined lung volume.**

Direct measurement of the lung volume will, in most cases, produce more accurate results and may slightly vary from using predicted values.

The BOD POD software was designed to be as user-friendly as possible without compromising the integrity of the measurement process. The program's main functions are built into a series of menus. At any level, the choices available to you as the operator are displayed on the computer screen. The function keys (F1 through F12) control the menu selections. Once a process has been initiated, **<ENTER>** generally moves you forward one step at a time, while **<ESC>** moves you backward one step at a time. For your convenience, the computer screen provides step-by-step instructions to guide you through the test process.

NOTE**WHEN SELECTING A TESTING LOCATION:**

DO NOT operate the BOD POD in a room where the temperature is not constant.

DO NOT place the BOD POD near a heater, air conditioner or fan.

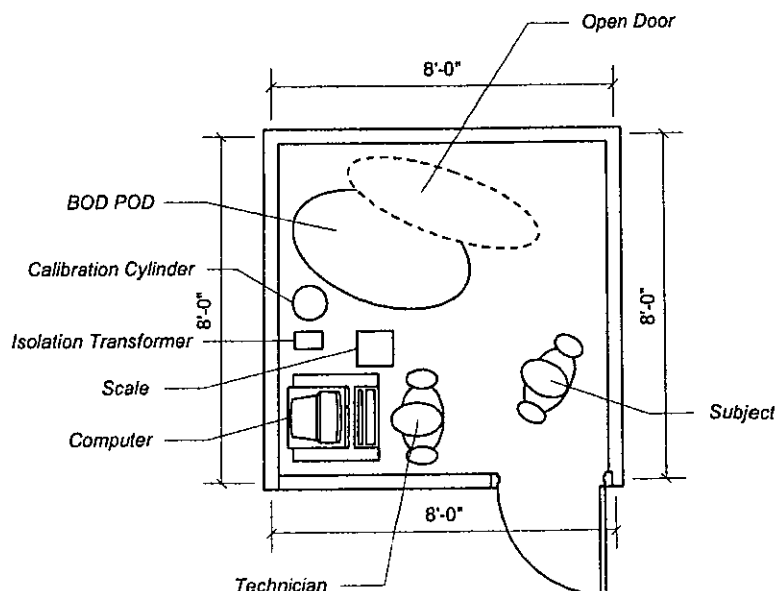
DO NOT place the BOD POD in direct sunlight.

DO NOT place the BOD POD near a door that may be opened or shut during testing.

DO NOT touch the BOD POD during calibration or testing.

Selecting a Testing Location:

The BOD POD should not be touched during a test and should be positioned so it is out of the way of people passing by. If someone accidentally pushes or leans against the BOD POD during calibration or testing, the test should be repeated from the beginning.



Temperature:

Room temperature should be held at a constant value between 70 and 90 degrees Fahrenheit (21 and 32 degrees Celsius). The particular temperature chosen is not important, because it is taken into account during the calibration procedure that precedes each test; however the room temperature should remain stable and not fluctuate. Unstable or fluctuating temperatures can produce erratic data.

Acoustic Factors:

The BOD POD has been designed to be relatively immune to external acoustic interference. However, the BOD POD does rely on the measurement of very small pressure changes. Fan-driven ventilation systems, doors opened or shut during a test, and other conditions which generate low frequency acoustic noise may reduce accuracy.

BOD POD System Components:

- 1) **BOD POD Chamber** - The BOD POD Chamber is an instrument that measures an individual's body volume.
- 2) **Electronic Scale** - The Electronic Scale accurately measures an individual's mass.
- 3) **Computer System** (including Monitor) - The Computer System controls the function of the BOD POD Chamber through proprietary software.
- 4) **Isolation Transformer** - The Isolation Transformer provides additional electrical safety for the BOD POD equipment. All BOD POD cables should be connected to the Isolation Transformer as described in this manual. The Isolation Transformer is connected to the power source with a hospital grade power cord provided by LMI.
- 5) **Calibration Cylinder** - This cylinder is used to calibrate the BOD POD before use.
- 6) **Calibration Weights** - These weights are used to calibrate the electronic scale before use.
- 7) ****Printer** - The printer is an optional piece of equipment that is used to print test results. The printer is supplied with units sold within the United States.

**** BOD POD units sold internationally are not supplied with a printer. The compliance of the BOD POD system with medical device safety standards can only be ensured for those systems solely utilizing the equipment and accessories supplied by LMI.**

BOD POD Accessories:

- 1) **Breathing Tube/Filter Assembly (P/N 5702028) and Nose Clip (P/N 5702030)** - These are used in the measurement of the subject's lung volume. Only LMI-supplied breathing tube assemblies, which is a single-use device, should be used for this measurement.

LMI should be contacted if any of the above components or accessories requires repair or replacement.

BOD POD Set-Up Checklist:

☒ **Verify the BOD POD is level and stable.**

- ▶ In order to prevent the BOD POD from moving during use, your BOD POD comes equipped with one of the following mechanisms. You can determine which mechanism you have by visually inspecting underneath the BOD POD.
 - a) If your unit has leveling feet behind the rear wheels, lower the feet by unscrewing them until they make firm contact with the ground. Make sure feet are raised if you need to transport your BOD POD.
 - b) If your unit has locking casters on the rear wheels, simply push down the brake pedal to engage the brakes. Push the pedal up to release.
 - c) If your unit came with a wheel chock, see Appendix for instructions.
- ▶ Is there room for the BOD POD door to open fully?
- ▶ Is the computer located on the left-hand side of the BOD POD?
- ▶ Can the subject enter the BOD POD easily, without encountering any obstacles?

☒ **Verify the Scale is level and stable.**

- ▶ Is the scale located in a convenient area?
- ▶ Is the scale (bubble) level?
- ▶ Are the leveling feet adjusted so the scale does not rock?
- ▶ Is the area clear of any wires or other objects which might touch the scale?
- ▶ Is the scale cable located out of the way of foot traffic?

☒ **Verify Cables are properly connected.**

Inspect all cables to verify they are connected properly at both ends. Inspect the **Data Cable**, **Scale Cable**, and **Power Cords** for both the BOD POD and **Computer** (see Figs. 1 and 2).

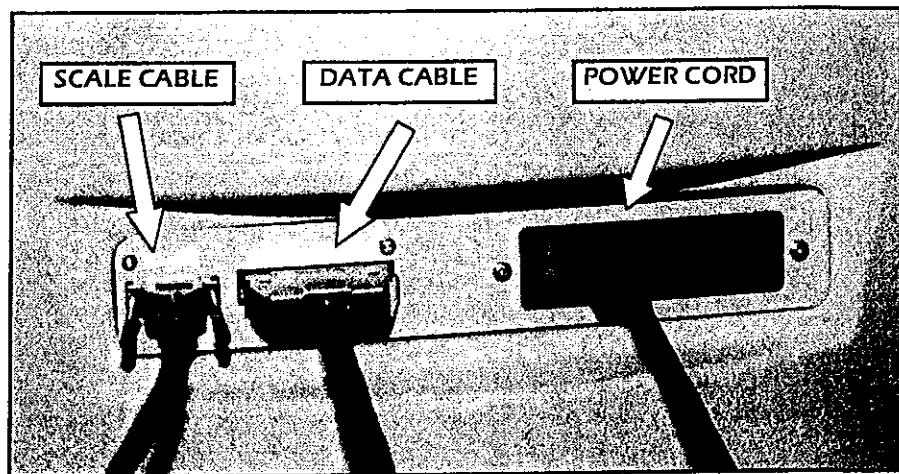


Fig. 1 – Rear Access Panel Cable Connections

Warning: To ensure electrical safety and compliance, the power cords for the BOD POD, computer, and computer monitor should be connected to the Isolation Transformer only, as shown in Fig. 2.

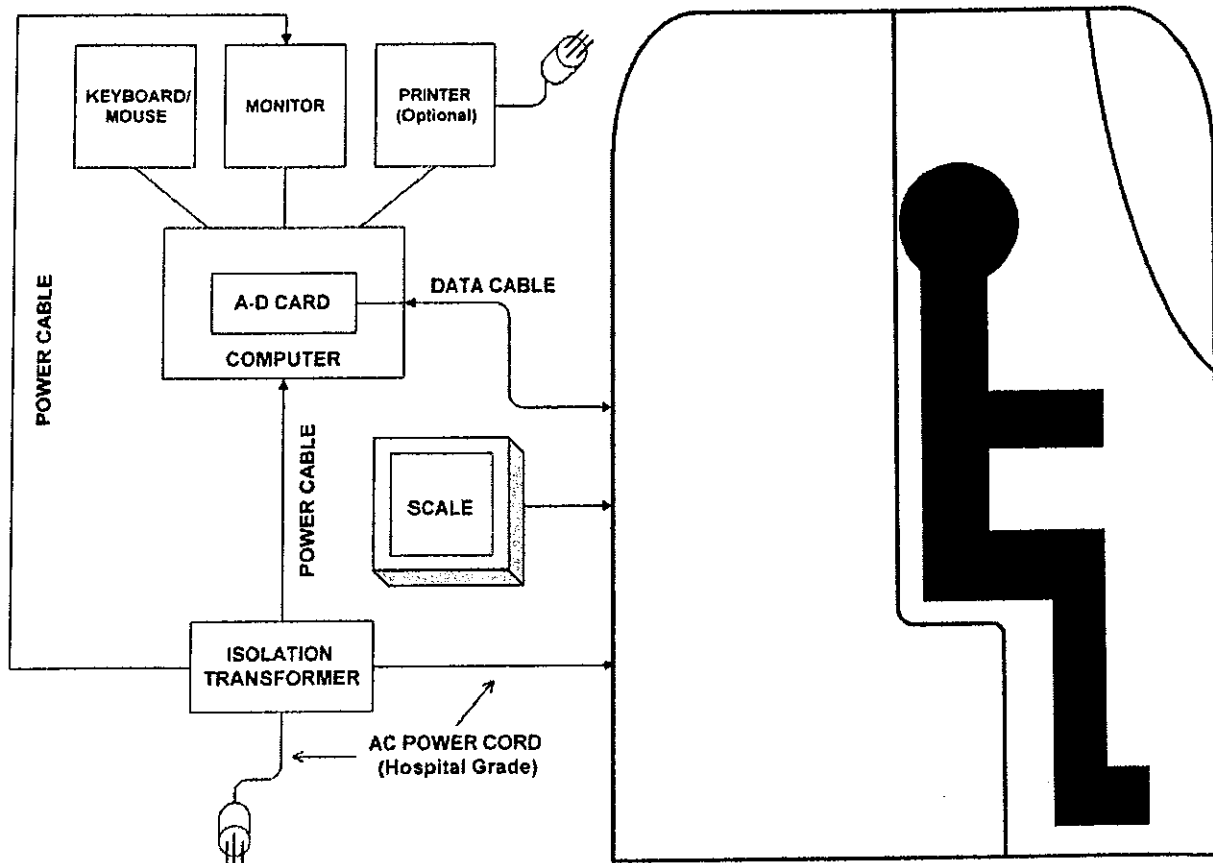


Fig. 2 – BOD POD System and Components

After all of the appropriate cables have been plugged into the corresponding outlets, the following five power switches must be turned on in order for the BOD POD system and components to be started:

1. Turn on the power to the isolation transformer by flipping the green power switch on the isolation transformer box. The switch should be illuminated when it is in the "on" position. This is also the main power control switch for the BOD POD system and its components.
2. Turn the main power supply switch for the computer to the "on" position. This switch is located on the back of your computer next to the fan.
3. Press the power button on the front of your computer box to the "on" position
4. Press the power switch on the front of the monitor to the "on" position
5. Press the power switch to the BOD POD to the "on" position. This switch is located on the back of your BOD POD.

Power to the BOD POD may be turned off by switching the isolation transformer box to the "off" position, which will turn off power to all BOD POD system components. Power to individual components may be turned off by switching off the individual power switches for each component.

Before Testing. . .

- ☒ **BOD POD Warm Up:** Warm up the BOD POD for at least 30 minutes prior to testing (advance software to the MAIN menu screen).
- ☒ **Verify Testing Environment:** Insure the testing environment is stable, especially with respect to room temperature. Temperature shifts caused by incoming hot or cold air should be avoided.
- ☒ **Check Scale Calibration:** Once the BOD POD has warmed up for 30 minutes, select F2 - PRACTICE from the MAIN menu, then select F1 - WEIGHT. Use the two gold calibration weights provided and weigh them as though they were a human subject. The reading should be within ± 0.01 kg of the calibration weights (19.99 to 20.01 kg). If the scale reading is off by ± 0.02 kg or more, it is necessary to calibrate the scale (see UTILITIES).
- ☒ **Prepare the Subject:**
 - ▶ Verify the subject is properly dressed for testing. *Minimal clothing is essential for accuracy.* A lightweight "Speedo" type swimsuit is ideal. "Boxer" or running shorts should be avoided, as they will contribute to large errors. All extra weight (jewelry, watches, etc.) should also be removed.
 - ▶ Have the subject wear a swim cap during testing. Be sure all hair is in the cap and release any air pockets by pushing air out from under the cap.

Before Testing (cont.). . .



Prepare the Subject:

- ▶ Have the subject use the rest room before testing, if necessary.
- ▶ Verify the subject is comfortable, relaxed, dry, and has not eaten or exercised for 3-4 hours prior to testing.
- ▶ Have the subject practice using the blue illuminated **Cancel Test** button to ensure they understand how and when to use it, and that it works properly. The button is located below the BOD POD seat, on the left side. This button can be used by the test subject to abort a test at any time. If the button is pressed, the test sequence is interrupted and the magnets locking the door become de-energized. The test subject is then able to push open the door easily.
- ▶ Have the subject remove all jewelry, eye glasses, and other accessories.

NOTE

You should proceed with testing ONLY if you have read this manual and are fully knowledgeable and comfortable with the entire testing process. If you have questions or are unsure of any procedure, please contact Life Measurement, Inc. by phone at (925) 676-6002 or by fax at (925) 676-6005.

IT IS YOUR RESPONSIBILITY TO OBTAIN PROPER TRAINING BEFORE OPERATING THIS EQUIPMENT.

During Testing. . .

- ☒ **Testing Environment:** Maintain a comfortable, quiet, and private atmosphere during testing.
- ☒ **Computer Tips:** Follow all computer prompts; do not use "shortcuts" for any reason (i.e., closing the BOD POD door before you are prompted to do so).
- ☒ **Instruct the Subject:**
 - ▶ Not to touch the scale during the zero check before and after actual weighing, and to remain still during the five-second weighing.
 - ▶ Not to touch the faces of the door locking magnets when entering /exiting the BOD POD; this can cause an injury.
 - ▶ Not to touch the BOD POD walls or windows of the BOD POD during any phase of calibration and testing; this can cause errors.
 - ▶ To remain quiet and relaxed during testing. Talking or laughing may invalidate results.
- ☒ **To Cancel a Test:** Perform any one of the following:
 - ▶ Press the ESC key on the keyboard;
 - ▶ Turn the BOD POD power switch on the backside of the BOD POD to the "off" position. This will turn off the power to the entire BOD POD, including door magnets.
 - ▶ Unplug the BOD POD power supply cord from the power outlet.

- ▶ The subject can cancel the test by pressing the illuminated blue button below the seat on the left side.

After Testing. . .

- ☒ **Exit BOD POD Software:** When finished testing at the end of the day, exit the BOD POD program (F6 - EXIT from MAIN menu).
- ☒ **Close BOD POD Door:** Leave the BOD POD door closed when not in use.

Warm-Up and Equilibration:

- ▶ **Warm-up the BOD POD for at least 30 minutes prior to testing.**

Turn the computer and monitor on. The computer will boot and engage in preliminary diagnostics. In most cases, your BOD POD software should load automatically and the copyright screen should appear. If not, double-click on the BOD POD icon. Please remember the BOD POD software license does not permit duplication of software or distribution to any other party. Press any key to proceed to the MAIN menu. It is important you initiate the program and advance to the MAIN menu for the system to begin the warm-up period.

- ▶ **Equilibration.**

The BOD POD should be equilibrated with the testing environment. If the BOD POD is moved from a cold to a warm area, or if the heating or air conditioning has recently been turned off, it may require several hours for the BOD POD to equilibrate with the temperature of the room.

- ▶ **Verify system performance.**

To insure the BOD POD is warmed-up properly prior to subject testing, perform up to three (3) Test Systems. Acceptance criteria should fall within the ranges noted at left.

NOTE

TEST SYSTEM Acceptance Criteria:

☒ Mean Volume should be ± 100 from actual.

☒ Standard Deviation should be < 75 ml.

NOTE

**PERFORMING
PRACTICE TESTS:**

It is highly recommended you allow new subjects to undergo a Practice Test before performing an actual test. This will allow the subject to become familiar and relaxed with the testing process. To begin a practice test, press the F2 - PRACTICE TEST option from the MAIN menu, then select F2 - BODY VOLUME. Follow the directions given for a practice test. No real results will be given.

Main Menu:

The MAIN menu displays the following options:

F1 START TEST
F2 PRACTICE
F3 UTILITIES
F4 LOAD SUBJECT
F5 PRINT TEST
F6 EXIT

You may choose an option by pressing the function key corresponding to that option.

Calibrating the Scale:

Once the BOD POD system has been running for 30 minutes, it is recommended you verify the scale calibration by selecting F2 - PRACTICE, then WEIGHT. Press <ENTER> to proceed, and when the computer displays PLEASE STEP ON SCALE AND PRESS <ENTER>, place the two 10 kg gold weights on the scale (total weight = 20 kg). Remove the weights for the zero check. If the weight is within ± 0.01 kg of the correct weight (19.99 to 20.01 kg), no calibration is necessary. If the weight is off by more than ± 0.02 kg, it is necessary to calibrate the scale (see UTILITIES). Once the scale calibration is verified, select F1 - START TEST to begin a normal test sequence.

NOTE

The F4 option "LOAD SUBJECT" can be used in place of "START TEST" if the subject's data has already been saved from a previous test. This option allows you to bypass entering the subject's information.

Start Test (F1 from MAIN menu):

Once you select START TEST, the computer will prompt you to gently close the door and press <ENTER>.

Each test will require the BOD POD to be calibrated. Calibration takes place in the background and, therefore, adds minimal time to the test process. As the BOD POD is calibrating, you will be prompted to perform other tasks.

- **Insure the subject is appropriately dressed and ready for testing.** The first computer prompt reminds you it is essential the subject be appropriately dressed in minimal clothing; a lightweight "Speedo" type swim suit is ideal. ***This is an absolute requirement for accuracy.*** Under no circumstances should a test be performed if the subject is not wearing proper clothing. The subject should also wear a swim cap to compress their hair during testing (it's OK to wait until a few seconds before testing to put the swim cap on), and remove all jewelry and eyeglasses. It is also recommended the subject use the rest room, if necessary, before beginning the test sequence. When ready to proceed, press <ENTER>.

NOTE**WHEN
CALIBRATING:**

Once you have begun the calibration process you should continue through subject testing without interruption. If more than six (6) minutes lapses between steps, you will be prompted to recalibrate.

Test subjects as soon as possible after calibration for greatest accuracy.

Calibrating the BOD POD (Empty):

- ▶ **Calibrate the empty BOD POD.** The next step is to calibrate the BOD POD. Prior to each test, a two point calibration is performed. The first calibration establishes a "zero" baseline; the second step uses a calibration cylinder to establish a second calibration point (approximately 50 liters). You have been provided with a unique white cylinder which serves as your calibration volume; it is very important you handle this cylinder with care. If it is dented, the volume will be altered and possibly provide inaccurate test results. Replacement calibration volumes are costly, so *please* be careful.

Following the weighing sequence, the computer screen will display a series of simple instructions as explained below to guide you through the calibration sequence. Simply follow the instructions as they are given. *Do not touch or lean against the BOD POD during any part of the testing process.*

- ☛ **Please install new filter and breathing tube.** Press <ENTER> (NOTE: You will only see this prompt when **MEASURED lung volume is selected**). The breathing tube packet includes a barrier filter and breathing tube. Connect the tube to the filter and then install this assembly "filter end first" into the nozzle in the BOD POD. Breathing tubes are designed for single use only. Used tubes should be discarded after testing.
- ☛ **Empty the chamber, leave the door open, and press <ENTER>.** Verify the chamber is empty and the door is fully open. Press <ENTER>.

➤ **Gently close the door, then press <ENTER>.**

Gently close the door. Always close the door in a consistent fashion by holding the handle and gently allowing the door to close. Do not rush the door closure process or force the door closed; simply allow it to gently close. Press <ENTER> once you hear the magnets connect. This will begin a 50-second data collection period (to establish a zero baseline). The computer screen will read EQUILIBRATING for 30 seconds, then COLLECTING DATA for 20 seconds. Do not touch the BOD POD door during any part of this process.

NOTE**WHEN ENTERING
SUBJECT DATA:**

Once you have typed the appropriate information in a field, press <ENTER> to proceed to the next field. Most cursor movement keys (arrows, tab, etc.) are operational. Once all entries are completed, press the <ALT> and <ENTER> keys simultaneously to proceed to the next step.

Entering Subject Data:

- **Enter subject data.** The next screen allows you to enter information about the subject, including FIRST NAME, LAST NAME, TECHNICIAN, HEIGHT, AGE and GENDER (use the <ENTER> key to move from field to field). It is important you enter this information correctly, because there is no opportunity to modify it once a test is started. Height measurements should be entered to the nearest one inch. In addition, you also have the ability to enter other information in the open fields labeled 1, 2, and 3 and to type general comments in the COMMENTS section of this screen. You may not enter information in the fields labeled DATE and WEIGHT; this information is automatically entered by the computer during testing. Once all information has been entered, press <ALT>+<ENTER> to submit the screen.

After entering subject information, have the subject prepare for their test by putting the swim cap on over their hair and standby to enter the BOD POD once calibration is completed. Check that all the subject's hair is in the swim cap and any air pockets under the cap have been pushed out.

Calibrating the BOD POD (with Calibration Volume):

- ▶ **Calibrate the BOD POD with the calibration volume.**
 - ☛ **Please put your ____ liter calibrated cylinder in the chamber. Leave the door open and press <ENTER>.** Open the BOD POD door and gently place your cylinder in the chamber. Leave the door open and press <ENTER>.
 - ☛ **Gently close the door, then press <ENTER>.** Gently close the door and press <ENTER>. This begins a second 50-second data collection period (to establish a second calibration point). The screen will again read **EQUILIBRATING** and **COLLECTING DATA** as in the previous step. Also as before, do not touch the BOD POD door during this process.

Weighing the Subject:

- **Weigh the subject.** Weigh the subject in the minimal clothing which will be worn during testing. Remove any heavy jewelry, watches or hair ornaments before weighing. Even these small items can contribute to an incorrect weighing. If the subject needs to use the restroom, remember they must do so before weighing. Proceed with weighing the subject. When the computer prompts you to **CLEAR SCALE AND PRESS <ENTER>**, verify nothing is touching the scale and press **<ENTER>**.

At this point you will hear a single beep while the scale establishes a calibration baseline. ***Do not touch the scale during this period.*** The screen will then prompt you to **PLEASE STEP ON SCALE AND PRESS <ENTER>**. Wearing minimal test clothing, the subject should stand on the scale and ***remain very still for weighing.*** Press **<ENTER>** when the subject is standing still on the scale. Again, you will hear a single beep indicating the beginning of the five-second data collection period. A double beep signals the end of the weighing, and you should now instruct the subject to step away from the scale. Lastly, a final calibration check occurs: **CLEAR SCALE AND PRESS <ENTER>**. Make sure ***nothing*** is touching the scale for this step. The subject's weight is now displayed on the computer screen, and automatically entered into the data file. If you encounter any problems, repeat the entire weighing process from the beginning (back up by pressing **<ESCAPE>**). When ready, press **<ENTER>** to continue.

Measuring Body Volume:

► Measure the body volume of subject.

- ☛ **Request subject enter BOD POD, put hands in lap, and relax. Press <ENTER>.** Ask the subject to sit comfortably in the BOD POD, hands in lap. Identify the blue OPEN button on the lower left side of the seat, and explain that pressing this button at any time during a test will allow the door to open. Further explain the test will last for 50 seconds, and the door will be opened at the end of the 50 second period. This process will be repeated two or three times to ensure good repeatability of the measurement. The subject may hear the sound of valves opening and closing and a slight "swooshing" sound from the rear chamber. Following the 50 second test period, open the door.
- ☛ **Gently close door, then press <ENTER>.** Gently close the door, listen for the magnets to engage, and press <ENTER>. The first body volume measurement is now underway, and will last at least 50 seconds. Following the first body volume test, there will be a repeat test. Remember not to touch the BOD POD chamber during testing. After 50 seconds, you will hear a beep indicating the end of this test. The computer prompt will instruct you to open the door to conduct a second test.
- ☛ **Please open the door then press <ENTER> to conduct a second test.** Open the door and explain that a second test, just like the first one, will now be performed. Keep the subject sitting in the same position and proceed immediately to the second test. Follow the computer's instructions. If the second test is consistent with the first test, this segment of the test process is now

over. If the second test is inconsistent with the first test, you are asked to conduct a third test. The computer will not accept the data if two tests are not consistent. If three tests are performed and two consistent tests are not obtained for some reason, then it is necessary to repeat the test process from the beginning.

Measuring Lung Volume:

If lung volume is to be measured, the Breathing Tube Assembly should be attached to the breathing port inside the BOD POD (located in the upper corner, hinge side). The filter end of the Breathing Tube Assembly should be attached to the breathing port on the BOD POD unit. The Breathing Tube Assembly is designed for one time use only.

► Measure the lung volume of a subject:

- ☛ Please select **F1 - MEASURED**, **F2 - PREDICTED** or **F3 - ENTERED LUNG VOLUME**. If you select **PREDICTED**, the test is now over and results are displayed. Press <ENTER> to save results.

If you select **ENTERED**, type in a previously determined average lung volume (from a previous BOD POD test). Press <ENTER> to save results.

If you select **MEASURED**, proceed to the next step.

- ☛ **Measure the thoracic gas volume (lung volume) of the subject.** Explain the lung volume testing process to the subject:

"During this part of the test, we will measure the amount of air in your lungs. For the first 30 seconds, you will wear the nose clip while holding the breathing tube in your hand. When I wave at you, place the breathing tube in your mouth. This way, we can monitor the air going in and out as you breathe for approximately 15 to 20 seconds. When you place the breathing tube in your mouth, breathe in a natural and relaxed fashion. Ignore the sound of the valves opening and closing. Once the tube is in your mouth, take 3 or 4 normal breaths. At a certain point, the airway will close briefly for 2 seconds. You will be signaled when this

NOTE

WHEN MEASURING LUNG VOLUME:

During the lung volume measurement portion of the test, be sure to instruct the subject to puff **GENTLY** (like you would to clean your sunglasses) when prompted.

*happens. At this time, you should puff gently two or three times. **DO NOT BLOW HARD.***

If you wish, let the subject practice breathing in and out of the tube before it is connected to the BOD POD until they are comfortable breathing naturally into the tube. You may take your time with this part of the test process, since it is not dependent on the calibration. When you are ready to proceed press <ENTER>.

Now use the mouth tube and nose clip. Request subject breathe in a normal fashion. After a few breaths airway will shut and prompt will appear on screen. At that time, signal subject to puff three times from tube. Review the lung volume measurement with the subject. It's helpful to explain that during the first part of the test (30 seconds) they will just be holding the tube in their hand. When the computer prompts PUT TUBE IN MOUTH, signal the subject to put the tube in his/her mouth. Soon after, they will hear the valves adjusting. The subject should ignore these sounds and continue breathing in a normal fashion. Once the valves have adjusted, you will see the tidal breathing pattern of the subject appear on the computer screen. The airway valve will close at the second downward crossing of the dotted line (at a mid-exhalation point). It is best to anticipate this crossing by observing the computer screen so that you may signal the subject to begin the puffing (contraction and relaxation of the diaphragm muscle). It is helpful for the operator to stand in front of the BOD POD while watching the computer screen. This way, the operator can signal the subject at the appropriate time (when the computer prompt reads PUFF NOW).

NOTE

MEASURED LUNG VOLUME Acceptance Criteria:

- ☒ Is the breathing curve consistent?
- ☒ Does the computer indicate a merit value <1.00?
- ☒ Does the computer indicate an airway pressure value <35.0 cm H₂O?

Once a lung volume test has been conducted, the computer screen will display two numbers to help you evaluate the quality of the measurement. First, visually inspect the tidal breathing curves to insure a regular breathing pattern. Then, review the merit and airway values. The merit value reflects a mathematical analysis of the relationship between the airway pressure curve and the chamber pressure curve. It should say OK. If it says HIGH!, the test should be repeated and previous data ignored. A HIGH! lung volume test suggests the subject may have leaked air out of the airway tube and/or their mouth.

The airway pressure value reflects the maximum airway pressure generated during the puffing maneuver. It should say OK. If this value is HIGH!, it usually indicates the subject closed their glottis during the puffing. (In other words, the subject unknowingly performed a Valsalva maneuver.) If the airway value says HIGH!, the test should be repeated.

You may collect more than one lung volume test by pressing <ESC>. The computer will temporarily store each thoracic gas volume test, up to a maximum of five tests. You may scroll through these tests by pressing <TAB>. Notice the test number appears in the upper right hand corner of the screen. After you have reviewed the tests, be sure the one to be saved with the other BOD POD data is the last one displayed. Press <ENTER> to move forward and save the entire test. The other thoracic gas volume tests are discarded. If you cannot obtain a satisfactory lung volume measurement, you may default to a PREDICTED VALUE (F1) or you may enter a LUNG VOLUME (F2). Once you have accepted a lung volume test, or selected the predicted option, you cannot go back; the test is completed. Press <ENTER> to save test data. This completes the full test sequence.

Practice (F2 from MAIN menu):

F1	WEIGHT
F2	BODY VOLUME
F3	LUNG VOLUME
ESC	EXIT

This part of the software allows you to perform individual test sequences for practice purposes.

- ▶ **Weight (F1 from PRACTICE menu).** This option allows you to weigh a subject independently, without performing a complete BOD POD test.
- ▶ **Body Volume (F2 from PRACTICE menu).** It is recommended you allow a new subject to experience the BODY VOLUME measurement segment of the test process before collecting actual data. The subject can sit in the BOD POD for a quick 50 second measurement period in order to become comfortable with this portion of the test. No real data will be displayed, since calibration isn't performed.
- ▶ **Lung Volume (F3 from PRACTICE menu).** If you are planning to measure your subject's lung volume, it is recommended you allow new subjects to experience this measurement before attempting a complete test. For detailed instructions, refer to the **Lung Measurement** section listed under **Performing a Test**).

Utilities (F3 from MAIN menu):

F1	CALIBRATE SCALE
F2	FILE UTILITIES
F3	SETUP
F4	DIAGNOSTICS
F5	AUTO RUN
ESC	EXIT

The UTILITIES menu contains five sub-menus involving scale calibration, file utilities, system setup (calibration constants, etc.), system diagnostics and automatic test runs.

- **Calibrate Scale (F1 from UTILITIES menu).** This menu selection allows you to calibrate the scale using the traceable calibration weight(s) provided. The scale's calibration can first be checked by selecting WEIGHT from the PRACTICE menu and using the calibration weight as the subject. If this produces a reading within ± 0.01 kg of the actual weight, there is no need to recalibrate the scale. If the reading differs by more than ± 0.02 kg, the scale should be recalibrated. Always check the scale's calibration whenever the scale has been moved. Be sure the BOD POD system has been warmed up first for at least 30 minutes.

Follow the computer's instructions to calibrate the scale.

► **File Utilities (F2 from UTILITIES menu).**

F1	RETRIEVE TEST
F2	PRINT TEST
F3	COPY FROM FLOPPY
F4	CURRENT DATA
F5	CHOOSE DIRECTORY
ESC	EXIT

- ☛ **F1 - Retrieve Test.** Allows you to search through the current test directory to locate a specific test. The default setting leads to a global search, which displays all tests in that specific test directory. You may narrow the search to specific letters of the last name of a desired subject by typing those letters (i.e., typing the letter "B" will display all tests of persons with last names beginning with "B"). Once tests have been displayed, you may choose that test by positioning the cursor (using the up and down arrow keys to scroll through tests) at a specific test and pressing <ENTER>. The first time you press <ENTER> it will display the subject's personal information; if you press <ENTER> again it will display the body composition test data. It is not necessary to re-save a test once it has been retrieved.
- ☛ **F2 - Print Test.** Once you have retrieved a test into current memory, you may print it by selecting F2. Be sure the printer is turned on first.
- ☛ **F3 - Copy from Floppy.** Allows you to copy tests from a floppy disk to the hard drive.

- ☛ **F4 - Current Data.** Displays the current test in memory. Press <ENTER> to view test data.
- ☛ **F5 - Choose Directory.** Allows you to changed the directory in use. The default directory for test data is called "TESTS", and the complete path is C:\PLETH\TESTS.

► **Setup (F3 from UTILITIES menu).**

F1	STANDARD WEIGHT
F2	STANDARD VOLUME
F3	ALTITUDE
F4	LUNG VOLUME
F5	ENTER MODEL
F6	ENTER FACILITY
F7	CALIBRATE TV
ESC	EXIT

Within this area is information regarding calibration constants and equations pertaining to the BOD POD system's operation. Do not alter any information in these sections unless you are fully knowledgeable of the impact such changes may have. Refer any questions to your designated system administrator.

- ☛ **F1 - Standard Weight.** Should read 20.00 kg.
- ☛ **F2 - Standard Volume.** Should read the volume number found on the bottom of your calibration cylinder.
- ☛ **F3 - Altitude.** Should read your altitude.
- ☛ **F4 - Lung Volume.** Selects lung volume (measured or predicted).

- ☛ **F5 - Enter Model.** Allows you to select the model you wish to use as a default. The models available in the software are:
 - **Siri**—Used for the general population.
 - **Brozak**—Used for very lean or obese individuals.
 - **Schutte**—Used for African-American males.
 - **Ortiz**—Used for African-American females.
 - ☛ **F6 - Enter Facility.** Allows you to enter up to three lines of typed information that will appear at the top of a printed test.
 - ☛ **F7 - Calibrate TV.** This function should not be accessed for any reason, except by an LMI service technician.
-
- ▶ **Diagnostics (F4 from UTILITIES menu).** This menu should only be accessed under the direction of LMI service personnel.
 - ▶ **Auto Run (F5 from UTILITIES menu).** This selection allows you to perform a system test without a subject. The AUTO RUN menu contains automated tests used for troubleshooting.

Load Subject Data (F4 from MAIN menu):

Allows you to retrieve and apply subject information entered from previous tests to a new test.

Print Test (F5 from MAIN menu):

Allows you to print the current test data.

Exit Program (F6 from MAIN menu):

Select to exit the BOD POD software.

Subject Error. . .

Check to insure:

- ▶ Subject is wearing minimal clothing and swim cap (no jewelry) .
- ▶ Subject is breathing normally; no coughing, yawning, laughing, etc.
- ▶ Subject is sitting still, with no movement.
- ▶ Subject has not recently exercised (do not test any sooner than 30 minutes after exercising).

Operator Error. . .

Check to insure:

- ▶ Consistency with regards to opening and closing the door, testing sequence, etc.
- ▶ Everything is plugged in correctly.
- ▶ Calibration volume value is entered correctly.
- ▶ Scale is calibrated.
- ▶ BOD POD has been warmed up for 30 minutes.

Environmental Conditions. . .

Check to insure:

- ▶ AC vent is closed (or constant), or fan?
- ▶ BOD POD isn't near open doors to outside (wind factor).
- ▶ No one is pushing on door, etc.

Maintenance:

There are no serviceable parts on the BOD POD. Any problems encountered during operation should be reported to Life Measurement, Inc. (LMI) for servicing. All maintenance should be performed by LMI authorized personnel.

Cleaning the BOD POD:

Occasionally it may be required to clean the BOD POD chamber. It is recommended to clean the chamber on a weekly basis, or more often if the chamber surface becomes dirty. Standard customer facility cleaning and disinfection schedules can be followed provided the minimum cleaning frequency is achieved. When cleaning the BOD POD, the following instructions should be followed:

Cleaning of the BOD POD chamber should be done when required using the method described below, along with the suggested cleaners noted. Very little effort is required in cleaning the BOD POD, but it is very important the following method is followed to avoid accidental damage to the equipment.

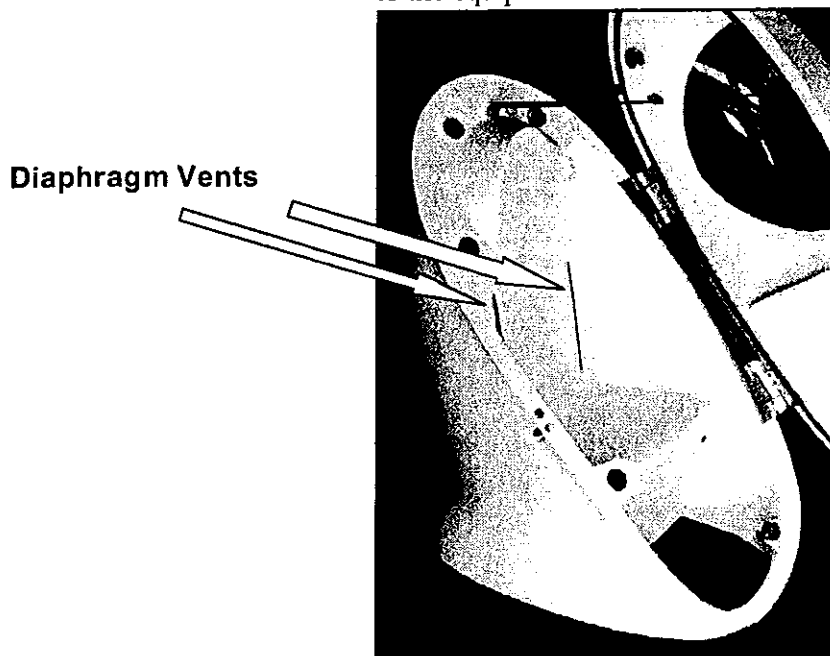


Fig. 3 – Location of Diaphragm Vents

► Step 1 - Cover Diaphragm Vents:

Before cleaning the BOD POD, locate and cover the two diaphragm vents with a cloth (see Fig. 3). This is necessary to protect the diaphragm, which could sustain water damage if accidentally sprayed with the cleaning fluid.

► **Step 2 - Protect Magnets and Keepers:**

It is necessary to avoid spraying the magnets located on the body of the BOD POD and the magnet keepers located around the BOD POD door. Fluid cleaners can negatively affect the performance of the magnets when they are energized by electric current to seal the BOD POD (see Fig. 4).

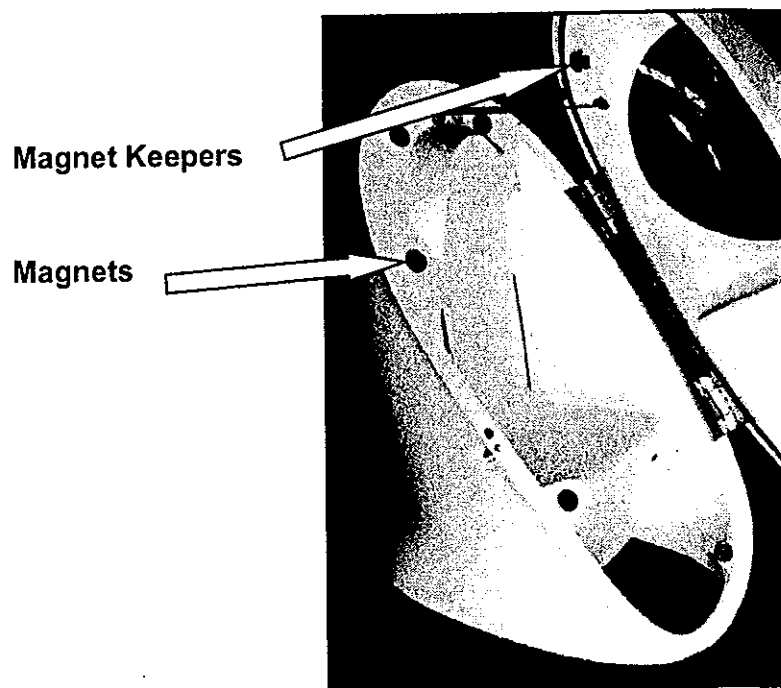


Fig. 4 – Location of Magnets and Magnet Keepers

► **Step 3 - Cover Air Holes:**

As you face the front of the BOD POD, locate the two Air Holes at the top right-hand corner of the seat back. It is recommended these holes be covered with a cloth to prevent cleaning fluid from entering the air tubes (see Fig. 5).

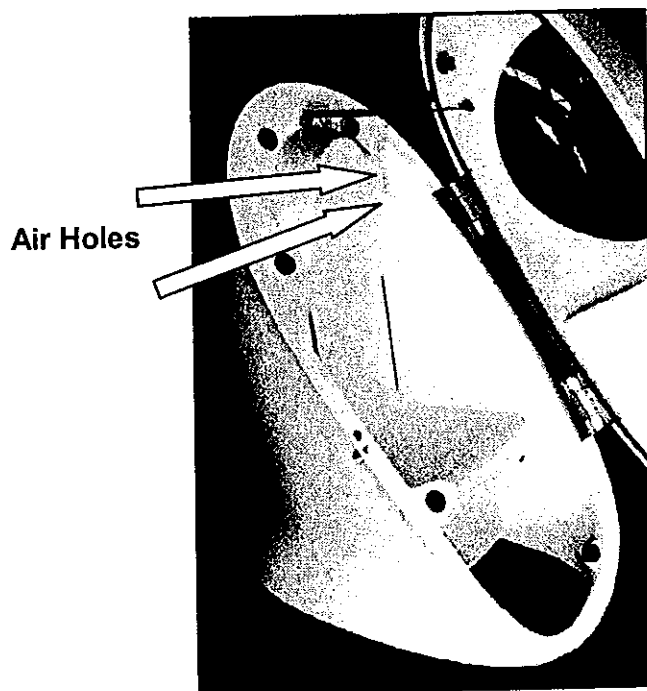


Fig. 5 – Location of Air Holes

► **Step 4 - Applying the Cleaning Fluid:**

Apply cleaning fluid to the BOD POD door, taking care to **AVOID THE RUBBER GASKET**. The cleaning fluid may cause the gasket to dry out, which could lead to air leakage when the door is sealed during testing. Also, the BOD POD may have a small amount of silicon (used as a sealant) around the window and door. **DO NOT REMOVE OR RUB THE SILICON SURFACE**. This can also cause the leakage of air during testing.

It is recommended that a general purpose-type cleaner be used to clean the BOD POD's white surfaces. The cleaners which provide the most successful results are those which contain **dimethyl benzyl ammonium chloride**. After cleaning with cleaning solution, the BOD POD should be wiped with a clean wet cloth to remove cleaner residue.

Since general purpose cleaners tend to leave a filmy substance on the surface of the window, it is recommended the window be cleaned with the glass cleaner provided with the BOD POD (Brillianize®).

Under normal conditions, there are no other items in the BOD POD system (i.e., scale, computer) that will require cleaning. However, if the scale platform becomes dirty, it should be cleaned with a clean, damp cloth.

Frequently Asked Questions:

1) In simple terms, how does the BOD POD measure volume?

If a fixed quantity of air is injected in a closed chamber, the pressure in the chamber will increase. The magnitude of the increase is dependent on chamber volume. If the chamber volume is small, the pressure increase will be relatively high. Conversely, if chamber volume is high, the pressure increase will be small. This effect makes it possible to measure chamber volume by injecting a known quantity of air and measuring pressure change.

2) Why is it necessary to wear minimal, tight-fitting clothing such as a swimsuit?

All air is not equally compressible. The reasons for this are rather technical and have to do with loss or gain of heat. Air that is in contact with clothing loses a small quantity of heat when it is compressed. This causes it to be more compressible than air not in contact with clothing. This means that significant quantities of clothing will cause a measurement error.

3) If a subject wears too much clothing, does their body fat percentage go up or down? It seems like like it would go up.

Too much clothing causes the BOD POD to yield a lower fat percentage number. This is because the greater compressibility of air in contact with the clothing mimics the effect of less body volume. This is equivalent to higher body density such as would be found in a leaner person.

4) What effect does anxiety have on test results?

There is no simple answer to this question. In general, we do not expect there would be an effect. If, however, anxiety were to affect breathing patterns in a way that changed lung volume over the course of the entire test, it would be possible that results could shift about 1%.

5) If a subject has recently exercised, how will this affect test results?

When a subject is tested too soon after exercising, the possibility exists for inaccurate lung and body volume measurements. For the most accurate results, it is strongly recommended subjects not exercise for 3-4 hours prior to a BOD POD test.

6) Why is calibration required before every test?

Calibration is required before every test to insure the BOD POD provides the most accurate results possible. Very high precision is required to do this. To illustrate, a shift of body density of 0.2% of reading yields an approximate 1% change in measured body fat.

7) Does skin temperature affect BOD POD test results?

No. This question is often asked, probably because of frequent reports that skin temperature affects bioelectric impedance devices. The BOD POD makes a direct volumetric measurement, which is not affected by skin temperature.

8) Why is the correct altitude important?

An altitude that is entered incorrectly will not greatly affect percentage body fat results. However, it will cause the tidal volume graphic displayed in the upper right corner of the screen to be incorrectly calibrated. Any error in body fat will be due to an inaccurate correction for breathing occlusion at other than average lung volume. Since this discrepancy is usually small, so will be the error. However, in order to insure the most accurate results possible, it is recommended the proper altitude always be used.

9) How long should the BOD POD warm up before testing?

It is recommended that the BOD POD be warmed-up for at least 30 minutes prior to testing.

10) What does it mean when the computer screen displays "Data Invalid"?

A "Data Invalid" message indicates there has been an error in measurement of either weight or body volume. The causes of such error(s) might include:

- a) Scale not calibrated;
- b) Subject weighed with clothing;
- c) Incorrect calibration standards entered;
- d) Subject not wearing swim cap;
- e) Incorrect subject data entered (height and sex);
- f) Weighing performed incorrectly;
- g) Error in calibration procedure;
- h) Door open at wrong time;
- i) Subject/operator pushing or leaning on unit during testing;
- j) Valsalva maneuver during lung volume test.

11) How often should the scale calibration be checked?

Although the scales retain their calibration very well, it is recommended the scale be recalibrated at least once a week. If the scale is moved for any reason, it should be leveled and recalibrated.

12) When performing an AUTO RUN, what are acceptable readings for mean volume and standard deviation?

After a 30-minute warm-up and calibration, prior to AUTO RUN, an empty chamber should indicate a mean volume of ± 100 from actual and a standard deviation of < 75 ml.

13) Is any system testing required prior to testing a subject? How can one determine if the BOD POD is working properly?

Following the 30-minute warm-up period are two recommended system tests. The first test checks the integrity of the electronics and other subsystems as follows:

- ➔ From the UTILITIES menu, press F4 -DIAGNOSTICS, then press F1 and follow the on-screen instructions.

The second test insures proper system performance.

- ➔ From the UTILITIES menu, press F5 - AUTO RUN. After performing a baseline check, AUTO RUN will run 6 consecutive readings and perform an analysis of the results.

14) Why doesn't the increase in temperature caused by human presence in the front chamber doesn't affect test results? Is the air blower on during actual testing?

Because the air temperature in an enclosed volume changes, the pressure also changes. The BOD POD knows how to isolate and reject this effect. The BOD POD does not rely on a simple pressure reading due to injected air, but rather on periodically fluctuating volume perturbation. The data gathered is analyzed so as to reject all pressure changes that could not be a result of this periodic perturbation. Pressure changes due to temperature do not affect measured volume.

The purpose of the blower is to equalize air composition between the front and rear chambers. It operates to do so between tests, but remains off during data gathering.

15) It is possible for a person to become locked inside the BOD POD?

There are several systems that insure a subject can exit the BOD POD at any time. First, there is a mechanical lighted switch in the interior which, if pressed by the subject inside, releases the magnets and aborts the test. If the operator presses the ESC key during a test, the magnets release and the test is aborted. Also, simply unplugging the BOD POD power cord or turning off the BOD POD will de-energize the magnets.

16) What is the function of the air blower?

The purpose of the air blower is to maintain similar gas composition in the front and rear chambers. This is required to maintain maximum accuracy, because the compressive characteristics of the air vary a little depending upon its composition.

17) Is the BOD POD portable?

The BOD POD can be moved as long as the following precautions are observed:

- ➔ Never lift the BOD POD by the door. Attempting to do so will probably cause misalignment of the door and inconsistent test results. For the same reason, the door should also not be allowed to slam shut or rattle. It is recommended that when moving the BOD POD, a foam rubber pad be placed in the door.
- ➔ Be sure that nothing impinges on the inflatable gasket. If the BOD POD is placed on its side, it should be the side with the door handle. The Plexiglas window should also be protected. Its surface should never be used for support or tied down.
- ➔ To prevent the unit from tipping over during transport, always move the BOD POD with the door closed. The application of excessive lateral force to the BOD POD when the door is fully open may cause the unit to tip over.

- ➔ Before moving the BOD POD, raise the two leveling feet as high as possible. The door of the BOD POD should be completely closed before the BOD POD is moved. Be aware that when the leveling feet are raised, the BOD POD becomes “wobbly,” especially if the door is opened. Also, take care not to move the BOD POD roughly over uneven surfaces so as not to damage the castors.
- ➔ When setting up the BOD POD in a new location, remember that the scale must be leveled and recalibrated with the precision weights provided by LMI to avoid inaccurate results.

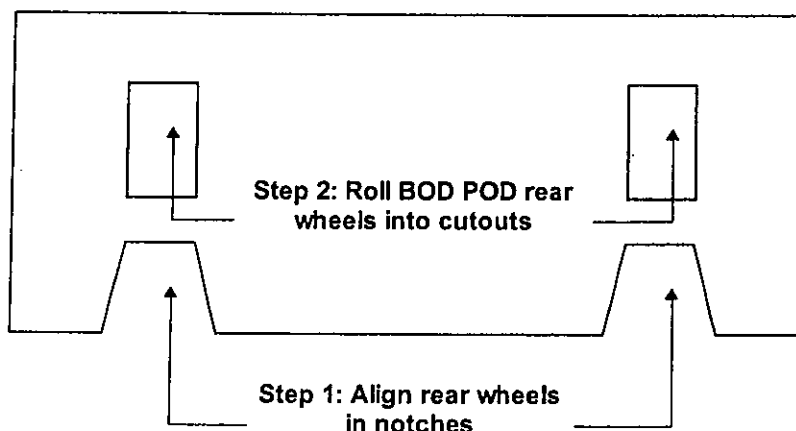
Wheel Chock

Instructions for use:

The Wheel Chock supplied with your BOD POD is designed to keep the BOD POD stable on hard floor surfaces, or low-nap carpet. You may not need a wheel chock if the BOD POD is placed on medium or heavy-nap carpet.

For the Wheel Chock to work effectively, the rear wheels of the POD must rest in the rectangular cutouts in the chock. To install the wheel chock properly:

- (1) Roll the BOD POD straight backwards about one foot to ensure the wheels are oriented correctly (straight, and in line with the cutouts).
- (2) Place the chock in back of the wheels, centering the two indexing notches on each of the two wheels.
- (3) Carefully lift and pull the BOD POD straight backwards so the wheels roll up onto the chock and into the rectangular cutouts. Pull from underneath the rear of the BOD POD. Never push on the front (door) of the BOD POD.
- (4) Visually inspect that both wheels have dropped into the cutouts.



Wheel Chock Placement

Installation and Operating Instructions for ISOBOX Isolation Transformer

The isolation transformer provided with your BOD POD is intended for applications where medical devices require improved electrical isolation and/or reduced leakage current to comply with existing safety standards.

Only the ISOBOX ISB-060M that has been provided by the BOD POD manufacturer should be used with your system. Do not modify the transformer; voltage has been preset at the factory. Do not connect any other devices to the transformer.

Installation:

Connect the isolation transformer between the BOD POD system components and the power supply as shown below.

